STATEMENT OF:
THE UNION OF CONCERNED SCIENTISTS

BEFORE THE:
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

PRESENTED BY
DAVID FRIEDMAN
RESEARCH DIRECTOR

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Thank you Mr. Chairman and Members of the Committee for the opportunity to testify before you today. My name is David Friedman. I am the research director and a senior engineer with the Union of Concerned Scientists' (UCS) Clean Vehicles Program. UCS is a nonprofit partnership of scientists and citizens that has been working at the intersection of science and policy for over 30 years.

To begin, I want to note that during the five minutes I will use to speak today, the U.S. will spend over two million dollars on imports of oil and other petroleum products. That represents nearly $500,000 leaving the US economy every minute—almost one-third of the U.S. trade deficit.

As long as the U.S. is tied to oil, American's pocket books will be susceptible to instability in the Persian Gulf and other regions of the world. Rising oil consumption in China and other developing nations will only make matters worse. And as long as the U.S. is tied to fossil fuels, we will be contributing to many significant environmental problems that impact our health and our economy, especially the reality of global warming.

These facts make the destination clear—we must switch to clean, renewable fuels to power our cars and trucks—but the reality is that there are no silver bullets to tap into overnight. We will continue to be dependent on oil as a transportation fuel for decades to come.

While there are no silver bullets, there is reason for optimism if we set ourselves on a path of innovation and efficiency. Innovation is required because all of the possible clean, renewable fuels require breakthroughs to be affordable and widely available. Efficiency is needed because the problem is too big to wait for these breakthroughs and we already have the technology.

Innovation
If we are to tap into innovation, there are at least three major options that could serve as alternatives to gasoline: renewable hydrogen, cellulosic ethanol, and renewable electricity. These three share many features:

- They have the potential to eliminate the use of gasoline or diesel as an automotive fuel by the middle of this century if aggressively pursued;
- They will require changes to or an overhaul of the refueling infrastructure;

- They all need breakthroughs in production, while hydrogen and electric vehicles also need breakthroughs in storage technology if they are to work.
- There are different ways to make the alternatives, some of which could actually harm U.S. energy security and the environment;
- They all require vehicles to be significantly more efficient than they are today in order to fulfill their potential, otherwise they will require too much land and too many resources;

Because breakthroughs are still required, nobody knows which alternative is the right one. It could be fuel cell vehicles powered by hydrogen made from the sun, the wind or biomass. It could be hybrids running on cellulosic ethanol made from grasses, rice straw, corn plants, and other woody products grown in the U.S. It could also be battery electric vehicles that develop from hybrids that you can plug-in and recharge with renewable electricity. But because these alternatives all have such promise, each one needs to be supported so that they can eventually compete to determine the best path.

Accelerating innovation towards clean and renewable alternatives to oil will not be a small or inexpensive task, but the benefits far outweigh the costs. To be successful, such a path will need a clear and reasonable timetable along with milestones to help determine which alternative is showing the most promise over the next decade or two. The necessary support that will be needed on this path must also recognize that hydrogen, electricity, and even biofuels are not inherently clean – instead they are energy carriers that are only as clean as the process that produced them and how they are used.

Efficiency

Improving the efficiency of the cars and trucks consumers drive every day can sometimes get lost in the excitement surrounding clean, renewable alternatives to oil. However, investments in vehicle efficiency actually offer greater potential to reduce oil dependence in the near term and can create hundreds of thousands of new jobs in the U.S. while saving consumers billions on fuel. Improving vehicle efficiency is also essential to reducing the amount of land needed for the renewable hydrogen, cellulosic ethanol, or renewable electricity that could power vehicles in decades to come.

The automobile industry has been investing in technologies that can safely and economically allow consumers to get more miles to the gallon in cars, minivans, pickups and SUVs of all shapes and sizes. Figure 1 shows the potential for these technologies to dramatically increase the fuel economy of an SUV with the size and acceleration of a Ford Explorer. These technologies include efficient gasoline engines, more efficient transmissions, improved aerodynamics, high strength steel, and lower rolling resistance tires. The majority of these technologies have no influence on the safety of the vehicle. Some, however, such as the use of high-strength steel and aluminum and unibody construction could actually help make highways safer.

With technology costing only $600-$800, a consumer could have the choice of an SUV that gets the fuel economy of today's family car. For just over $2,000 a consumer could have the choice of an SUV that gets the fuel economy of a compact car. At just $2.00 per gallon, this SUV would save consumers over $6,000 on fuel costs during the vehicle's lifetime. The technologies

needed to get this SUV to more than 35 mpg would pay for themselves in less than four years (the savings in Figure 1 are based on gasoline at only $1.40 per gallon).

The problem is that automakers are not giving consumers these choices. Instead, for the past twenty years similar technologies have gone to doubling power and increasing weight by twenty-five percent. As a result, the average fuel economy of new automobiles is lower today than it was twenty years ago. Twenty years from now, however, this does not have to be the case. Because new technologies have been developed, there is an opportunity to move to a future where consumers can have the same size and performance they have today, but with dramatically higher fuel economy.

In order to quantify the benefits linked with such a future, UCS estimated the effect of moving existing technologies into cars and trucks over the next 10 years to reach an average of 40 miles per gallon (mpg) by 2015. We found that:

- In 2015, the benefits resulting from investments in fuel economy would lead to 161,000 more jobs throughout the country, with California, Michigan, New York, Florida, Ohio, and Illinois topping the list.
- In the automotive sector, projected jobs would grow by 40,800 in 2015.
- For consumers, the cost of the new technology would more than pay for itself, saving a net $23 billion dollars in 2015 alone.

Getting technologies like these into the fleet over the next ten years and then tapping into the growing potential of hybrid cars and trucks could get us to the point of saving five to six million barrels of oil per day by 2025 (Figure 2). That would be enough of a reduction in oil use to stop the current growth in oil demand and hold us where we are today while we wait for the breakthroughs that are needed for clean and renewable alternatives to oil.

But this will not happen on the current path. The Administration recently proposed an interesting change to the structure of fuel economy standards for SUVs, minivans, and pickups. While this change addressed a key automaker concern and had the potential to open the door to higher increases in the standard, the proposal falls short of the technically feasible and economically practical levels shown above by a factor of three. The Administration proposal also does not include any increases to the cars that represent fifty percent of all light duty automobiles sold today. Finally, the proposal did not close key loopholes in fuel economy regulations and may open up new ones.

Conclusion: Government Policy

A transition to clean, renewable alternatives to oil will be complex, expensive, and technically challenging and will not happen overnight. Investing in efficiency to cut oil use, while the best option over the next two decades, has often been overlooked and mired in political challenges. And neither of these will happen on their own. But these are exactly the reasons why federal, state and local governments must play a role. This is not surprising. In fact, the Federal government has helped drive every transportation revolution this country has ever seen, whether it was trains, planes, or automobiles. The next transition will be no different.

There are several different mechanisms the government could use, and many of them are currently being considered as options to help reduce oil usage. Among the viable options are:

- Enforceable, national oil savings targets
- Performance-based incentives for suppliers and manufacturers and eliminating the cap on consumer incentives
- Incentives to increase alternative fuel production, including production targets, research and development, and infrastructure investments
- Incentives and requirements to increase efficiency of oil usage in the heavy duty transportation and industrial sectors
- Closure of existing loopholes in fuel economy regulations and tax laws
- Increased fuel economy standards for cars and trucks

Again, none of these options is a silver bullet. And some, if not all of them, are politically challenging. But by adopting a reasonable package that includes several of these measures now, we can reduce the trade deficit and create hundreds of thousands of new jobs, while steadily reducing our oil usage. And that's something I hope we can all support.

Thank you for the opportunity to testify today. I would be happy to answer any questions you may have.

Attached please find copies of three reports we have done on jobs, technology, and existing loopholes.

Figure 1. Fuel Economy Potential for a Ford Explorer.

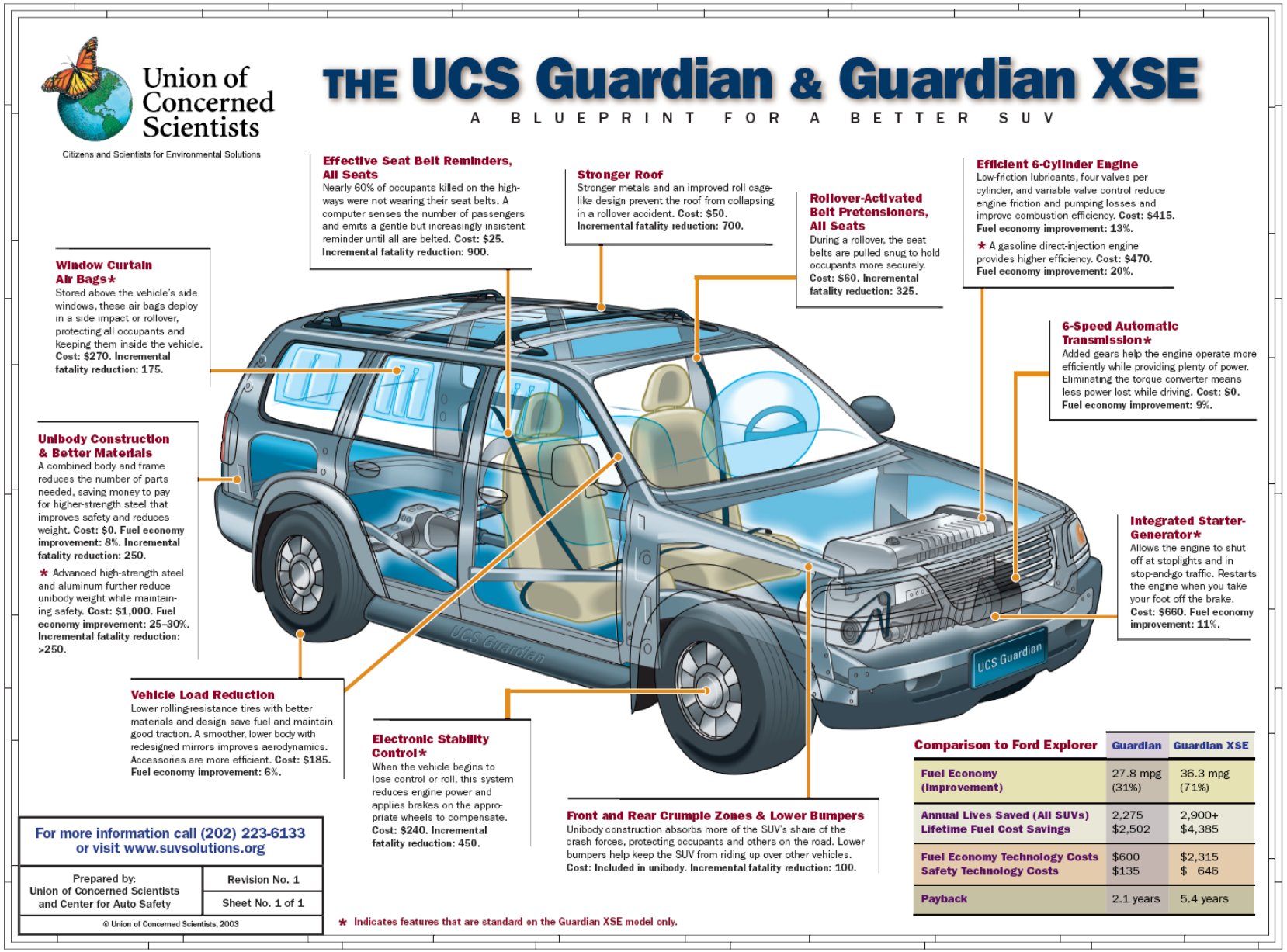

Figure 2. Oil savings potential from conventional efficiency, hybrids, and renewable fuels.